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AMERICAN METROLOGICAL SOCIETY.

At the call of the Council the Society held its annual meeting at Columbia University on Monday, December 21, 1896, Professor Egleston presiding. The Society was officially informed by the Secretary, J. K. Rees, of the deaths of their President, Dr. B. A. Gould, of Cambridge, Mass., and of their Councillor, Professor H. A. Newton of New Haven.

The following minutes were adopted and ordered printed in the daily papers:

The American Metrological Society has heard with profound sorrow of the death of their honored President on November 26th. Dr. Gould was President of the Society from 1889 to the time of his death, succeeding the late President, F. A. P. Barnard. By his ability, learning and enthusiasm he did much to further the objects of the Society, and as a member of the National Academy of Sciences and of the International Bureau of Weights and Measures his influence in metrology was world-wide.

Of late years he was especially interested in throwing the whole strength of the Society in favor of the early adoption of the metric system. It was his earnest wish and hope that before he passed away he would see the metric system adopted by the government and the people of this country.

Professor Hubert Anson Newton, of Yale College, was a member of the American Metrological Society from its organization to the day of his death, August 12th, and was for many years a Councillor. His interest in the work of the Society was great and continuous. He was especially active and conspicuous in the agitation of thirty years ago, which resulted in the enactment of the law of 1866 legalizing the use of the metric system. He prepared the table of metric equivalents, of customary weights and measures, which was incorporated in this act, and by which the relation of fundamental units was defined. Professor Newton's high rank as a man of science, his excellent judgment, and his clear, practical insight in matters relating to administration, made him an especially valuable member of the Society.

The Treasurer reported receipts for the year 1896.....	\$460.50
Balance from 1895.....	686.54
Total.....	\$1,147.04
Expenditures for 1896.....	705.89
Balance on hand.....	\$441.15

The Secretary reported on the work of

the year 1896. This report showed that some 50,000 documents relating to the metric system had been sent throughout the United States.

The latest paper issued by the Society was Dr. T. C. Mendenhall's reply to Herbert Spencer. This reply was printed in the *Popular Science Monthly* for October, 1896. The Society obtained 10,000 reprints. 5,000 copies of this reprint had been ordered by the New Decimal Association of London.

Professor Rees presented his resignation as Secretary and Treasurer. He stated that he could no longer spare the time for the onerous duties connected with the two offices.

The following officers were then elected :

President, T. C. Mendenhall, of Worcester, Mass. Vice-Presidents, Wolcott Gibbs, of Newport, R. I.; T. R. Pynchon, Hartford, Conn.; A. A. Michelson, Chicago, Ill.; T. Egleston, New York City; H. A. Rowland, Baltimore, Md.; J. H. Van Amringe, New York City; J. K. Rees, New York City. Treasurer and Recording Secretary, W. Le Conte Stevens, Troy, N. Y. Corresponding Secretary, O. H. Tittmann, Washington, D. C. Members of the Council, Cleveland Abbe, Washington, D. C.; R. H. Thurston, Ithaca, N. Y.; A. M. Mayer, Hoboken, N. J.; Henry Holt, New York City; Simon Newcomb, Washington, D. C.; W. F. Allen, New York City; S. P. Langley, Washington, D. C.; George Eastburn, Philadelphia, Pa.; C. A. Schott, Washington, D. C.; H. Jacoby, New York City.

On motion of Professor Van Amringe the following minute was recorded: "In yielding to the earnest request of Professor J. K. Rees to be allowed to retire from the offices of Treasurer and Recording Secretary, the Society expresses its sincere regret and its high appreciation of his laborious and effective services for fifteen years in conducting its business and in furthering the purposes for which it is organized."

Dr. Mendenhall remarked :

"MR. CHAIRMAN: In seconding the resolution offered by Professor Van Amringe, I beg to offer very briefly my own testimony as to the great efficiency of our Secretary, who now insists upon retiring from that important office. It will be remembered that a year ago Professor Rees urged upon the Society the acceptance of his resignation, but finally yielded to the urgent desire of our lamented President, Dr. Gould, and to that of every member of the Society, that he might continue at least for another year, as it was believed that the affairs of metrological reform in this country were in rather a critical condition and no one so well as he could direct the affairs of the Society during that period. His energy and industry in the administration of the laborious duties of his office are well known to us all. The Metrological Society, although not large in numbers, is great in its performances, and we all recognize the fact that in a large measure the success of these performances is due to the Secretary. If I may be permitted to refer to this action of Professor Rees in connection with the fact that I have been by your partiality elected to the Presidency of the Society, I desire to express my personal regret that in the performance of my duties during the coming year I shall be deprived of the advice and cooperation of Professor Rees in an official capacity.

"I may be permitted to remark at this point that I fully appreciate the high honor which has been conferred upon me by your choosing me to succeed the two distinguished men who have before been Presidents of this Society, and, while fully appreciating my own inability to discharge the duties which will come to me as I would like, I at the same time wish to express the sense of loss which I feel in the resignation of Professor Rees, upon whom the most inexperienced might lean with confidence. It

is a consolation for us to know, however, that we shall not in any degree lose the interest and activity of our late Secretary in his separating himself from the onerous duties of the office."

The Secretary reported that, at the Annual Convention of the Colleges and Preparatory Schools of the Middle States and Maryland, at Philadelphia, November 28, 1896, a resolution favoring the adoption of the Metric System was introduced by S. A. Farrand and was adopted with one dissenting vote. This association comprises about fifty colleges and universities and also eighty preparatory schools.

The Secretary reported that the Committee on Weights and Measures of the Boston Society of Civil Engineers had obtained the opinions of a majority of its members on the proposed action of Congress with relation to the use of the Metric System.

Postal cards reading as follows were sent to each member :

"I am——in favor of the passage by the present Congress of an Act requiring the metric weights and measures to be in use by the government departments generally by the beginning of the Twentieth Century, January 1, 1901."

"I should——be willing to have people generally of their own accord adopt metric weights and measures for their ordinary business transactions, and especially for those in which I am myself concerned, at the same time at which the government departments as a whole actually do adopt them."

The total number of cards sent out was.....	404
The total number of cards returned was.....	229
Number in favor of both clauses of the card	193
Number against both clauses of the card.....	21
Number for first clause and against second.....	2
Number against first clause and for second.....	11
Members in favor of a decimal system.....	2

The following interesting letter was read :

PICTON HOUSE, THAMES DITTON,
SURREY, ENGLAND, December 11, 1896.

J. K. REES, Secretary—*Dear Sir* : We beg to acknowledge your letter of the 28th ult., and are procuring a copy of the Blue Book containing the Report of the Select Committee of the House of Commons on Weights and Measures, before which evidence was given by one of our Directors, Captain H. R. Sankey,

R. E. We will send this to you as soon as possible, with the portion relating to our experience marked. Meanwhile, in case it does not reach you to be in time for use, we will state here that our reasons for adopting the *metric linear measures* were mainly two, both commercial: (1) To enable us to continue the interchangeable system, on which we work with our Continental licenses, and (2) to promote the sale of our engines in countries using the metric system.

It was considered possible that, although a specialty, the fact of our engines being figured in inches might tell against them when competing with others figured in millimetres. The results have been most satisfactory in all departments. In the drawing office it has been found that the change makes it easier to design, calculate, plot dimensions, check and read drawings. No mistakes have been made that can be traced to the change. In the works, where we chiefly work to gauges, there has been no difficulty in marking the latter, and marking off is easier. In a short time the men preferred metric measurements, and the change has involved no difficulty whatever. Trusting this may be of service to you, we are, sir,

Yours faithfully,

(Signed)

WILLANS & ROBINSON.

THERE were also presented the following extracts from British Consular Reports collected by the New Decimal Association established to Promote the Adoption of a Decimal System of Weights, Measures and Coinage in the United Kingdom:

ROTTERDAM, October 22, 1894.—“The simplicity of the Decimal System is so obvious that its adoption in England cannot fail to be of great advantage to all interested in the trade with those countries where it already is in vogue.”

MILAN, ITALY, October 18, 1894.—“As an engineer of some 20 years' residence upon the Continent, I have no hesitation whatever in stating that the present system of English weights and measures is detrimental to British commercial interests in countries like this, where the Decimal and Metrical System is in force.

“The sooner the Decimal System is adopted by Great Britain the more advantageous for her commercial interests when trading with the Continent in particular, as also to facilitate home calculations, especially in engineering departments, where excessive accuracy is an absolute necessity.”

VARNA, October 23, 1894.—“If the quotations and specifications in Trade Lists are made out in English Standards of Weights and Measures, intending purchasers here generally throw them aside and consult

others which give the required information in metres, kilogrammes, etc.

“In the Varna Trade Report for 1892 it is mentioned that it is especially in hardware and machinery that the non-adoption of the Metrical System acts most prejudicially against British manufactured goods.

“Commission agents here have repeatedly told me that though they represent British firms also they have, when a customer requires *precise* data as to the working and capabilities of a machine, to refer to some rival foreign maker's catalogue, with the result that the order is often placed with the latter.

“Not long ago a man came to me with the price list of a British machinery maker, and I converted for him the specifications into their metrical equivalents. He then said that the machine in question seemed just what he wanted, and that he would order one for trial, and give repeat orders if it turned out satisfactory. Meeting him again some time after, he told me that, although he would have preferred buying the English machine, he had imported one of German make, firstly, because he could not be bothered with recurring calculations based on an unfamiliar system, and secondly, because the measurements did not properly coincide with his existing machinery plant of Continental make.”

CONSTANTINOPLE, October 22, 1894.—“There is no doubt that the complicated and puzzling system of weights and measures still obtaining in England is long out of date, and has become more and more of an anachronism as England has increased her foreign trade.

“Personally I have, during my long official career, seen so frequently the inconvenience of the old system that I have for very many years been a convert to the ideas of your Association.”

ROUEN, October 24, 1894.—“Within the past 16 years I have served as H. M.'s Consul in three countries using the Metric and Decimal Systems, and I have not unfrequently had occasion to observe the maze into which an English trade prospectus or circular, if drawn up only on the British system, throws a foreigner accustomed from childhood to the perfect simplicity of the Metric System. And there is no doubt in my mind that the uncertainty and confusion thus created at times leads to the rejection by a would-be purchaser of a British manufacturer's circular or offers of sale.

“The British customs tariff is a model of brief simplicity, and yet we are often called upon to explain it. Within the past month I have been asked to explain ‘what a duty of 14/6 a gallon means and what is 7/- a cwt. for dried fruit?’ That is to say, what are their equivalents in metric weights and

measures and decimal currency? Foreign exporters to the United Kingdom would be thankful for a simple table of the British customs tariff in which the equivalent duties and units of Continental Metric Systems were shown in parallel columns beside our own."

FLUSHING, October 20, 1894.—"The adoption of the Metric System of Weights and Measures in Great Britain and her dependencies would, to my conviction, greatly benefit English manufacturers and tradesmen, and would certainly contribute to facilitate and extend business with this country."

MARSEILLES, October 23, 1894.—"Very often French merchants have complained of the great difficulty they had in reducing English weights or measures into those of the Metric System, and I have not the slightest doubt that if the said system was adopted in England it would greatly facilitate trade with this country."

LISBON, October 24, 1894.—"I am of opinion that our industries are materially handicapped in the competition with foreign manufacturers by the isolation of our system of weights and measures."

"The small tradesmen are, therefore, the real representatives of trade abroad, or at all events are fast becoming so. We should, therefore, cater to their requirements and cultivate their custom, for their friendship, to the full extent of the word, is of 'value' to us."

"In this regard I think I may safely say that to the tradesmen of foreign countries our system of weights and measures is a constant stumbling-block and acts as a deterrent. Not one in a thousand understands it, and rather than suffer the perplexity of it, or risk the loss that an erroneous computation would entail, pass on to our neighbors, who speak and write to him, in his native language, of Metres and Kilos. He thereby knows what he buys, knows what he has to clear through the custom house without risk of fine or forfeiture, and knows the length and cube which leaves him a profit when he sells."

"For these reasons I doubt not but that we lose in the aggregate much valuable trade."

ALGIERS, October 24, 1894.—"I have no doubt whatever that our antiquated and most irrational system has had an injurious effect wherever it has been employed."

VIENNA, October 26, 1894.—"I believe the adoption of the Metric System of Weights and Measures in Great Britain and her dependencies would highly benefit English importers and exporters."

MALAGA, October 23, 1894.—"I have heard purchasers here say that they bought German goods in preference to English ones because German merchants sent out their price lists made out with the prices in Spanish currency and weights according to the Metric

System, whereas the British merchant always sent his made out according to English weights and currency."

"I consider that British trade with Spain would increase if we adopted the Metric System."

CHERBOURG, October 27, 1894.—"I am convinced that if a metrical system of measurement and a decimal system of coinage were established in England it would materially benefit British trade, especially with those countries, such as France, where those systems are adopted."

BORDEAUX, October 20, 1896.—"If the views of the New Decimal Association were adopted by the legislative authorities they would, I believe, greatly contribute towards facilitating, and consequently towards extending, British commercial relations with foreign countries."

MADRID, October 25, 1896.—"You have my sincerest sympathy in your endeavors to make the Metric System compulsory in England. The numerous advantages of such a system are obvious and, moreover, its adoption would greatly facilitate the commercial relations of Great Britain with the rest of Europe."

BERN, October 21, 1896.—"In transacting my official business I have frequently observed that the present English system of weights and measures is certainly detrimental to British trade in my consular district. I should, therefore, strongly urge and advocate the compulsory adoption of the metric weights and measures in Great Britain and Ireland."

ROSTOCK, October 20, 1896.—"I can only say that if such a measure as the metric weights and measures bill be adopted compulsorily it would be greatly beneficial to all who have to do business with Great Britain and also to all British subjects who have to do business with the Continent."

KIEL, November 12, 1896.—"The inconvenience which was felt when the change was made in this country was soon overcome and the reform met with universal appreciation."

BREST, October 19, 1896.—"The advantages of the Metric System are recognized by all, and were it adopted in England the British tradesmen would greatly benefit by it in his transactions with France, as at present a Frenchman will not take the trouble to calculate the value of English weights and measures into French equivalents; hence no business is done."

SEVILLE, October 30, 1896.—"I heartily sympathise with the objects of your association, and in many commercial reports have drawn attention to the loss of British trade through tendering in British weights and measures and in sterling."

TENERIFFE, September 10, 1896.—"The customer, instead of seeking British firms to whom to give his

orders, now has the goods of other countries brought daily and cleverly to his immediate notice, by adroit commercial travelers or by extensive catalogues, in the language which he understands, which give him every particular of the article he wants in the *weights and measures and currency of his own country*. What English firms carry a commercial enterprise to this extent? Some doubtless do; the majority do not. But these things must now be done, and many others, unless we are willing to give up without a struggle our well earned commercial and industrial supremacy."

SOFIA, October 14, 1896.—"I have several times referred, in previous reports, to the difficulties which arise to hindrance of commerce in consequence of the obstinacy of Great Britain in adhering to its antiquated system of weights and measures and money."

VERA CRUZ, December 3, 1896.—"The compulsory use of metric weights and measures with regard to British goods exported to foreign countries and their use in quotations and advertisements of such goods, in lieu of Imperial weights and measures, would greatly tend to the benefit of the British export trade."

AMOY, November 17, 1896.—"For many years I have been convinced that the introduction of the Decimal System into our weights, measures and money would effect an immense saving of labor and would vastly increase the wealth of our country, and that it would greatly facilitate the sale of our commodities to foreign countries. I am very much rejoiced that an association has been formed to educate public opinion at home as to the advantages of the Decimal System and to bring the matter to the cognizance of the government."

FOREIGN OFFICE, LONDON, November 17, 1896.—"I am directed by the Marquis of Salisbury to inform you that a dispatch has been received from Her Majesty's Agent and Consul-General at Cairo. Lord Cromer considers that a very general opinion undoubtedly exists in Egypt that British trade with that country would benefit by the adoption of the Metric System of Weights and Measures."

It was voted that the next meeting of the Society be held at such time as the Council shall direct.

THE APPRENTICESHIP QUESTION.

THE *American Machinist* has been doing a work of great interest and importance to the sociologist and the political economist, in the collection of facts relating to the apprenticeship question. Its editors have

sent out to a large number of employers and managers of manufacturing establishments, and also to representative men among the trades-unions, a circular letter, calling for their experience and opinions relative to the desirability of maintaining the old methods of apprenticeship, and of thus insuring a supply of skilled labor in the coming generation. The summary of this, which is probably the first, attempt to secure reliable information at first hand, in this manner, is published in the issue of December 24th, which is substantially all devoted to the subject. It makes a mass of material which will well repay study and serious consideration.

A discussion in which this matter was made prominent took place at the Detroit Meeting of the American Society of Mechanical Engineers, which showed that the great leaders in the manufacturing industries of the country were very much alive to the importance of this question, and some interesting facts and opinions were there given, for which the transactions of that Society may be consulted. Articles appearing in the *Century Magazine* in 1893 also bear directly upon the subject. In the latter discussion, however, it is assumed that apprenticeship is abandoned, and that trade schools only can be expected to replace the older system in the supply of skilled labor. This assumption is proved to be without as much foundation as had probably been generally supposed. Of the 116 establishments contributing to this later discussion, 85 take apprentices—73 per cent. of the whole number—and 92 per cent. of these express themselves as satisfied that the system is a good one, even for our time. Forty-seven per cent. of all those taking apprentices have written agreements and contracts with them. The general trend of testimony seems to be in favor of taking a boy for a probationary period, to ascertain his capabilities and disposition, and